# Command Line Interface Protocol Configuration Guide

## Cajun™ P550/P220 Switch Version 4.0

**Lucent Technologies Command Line Interface Protocol Configuration Guide, Volume 1**

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Version 4.0

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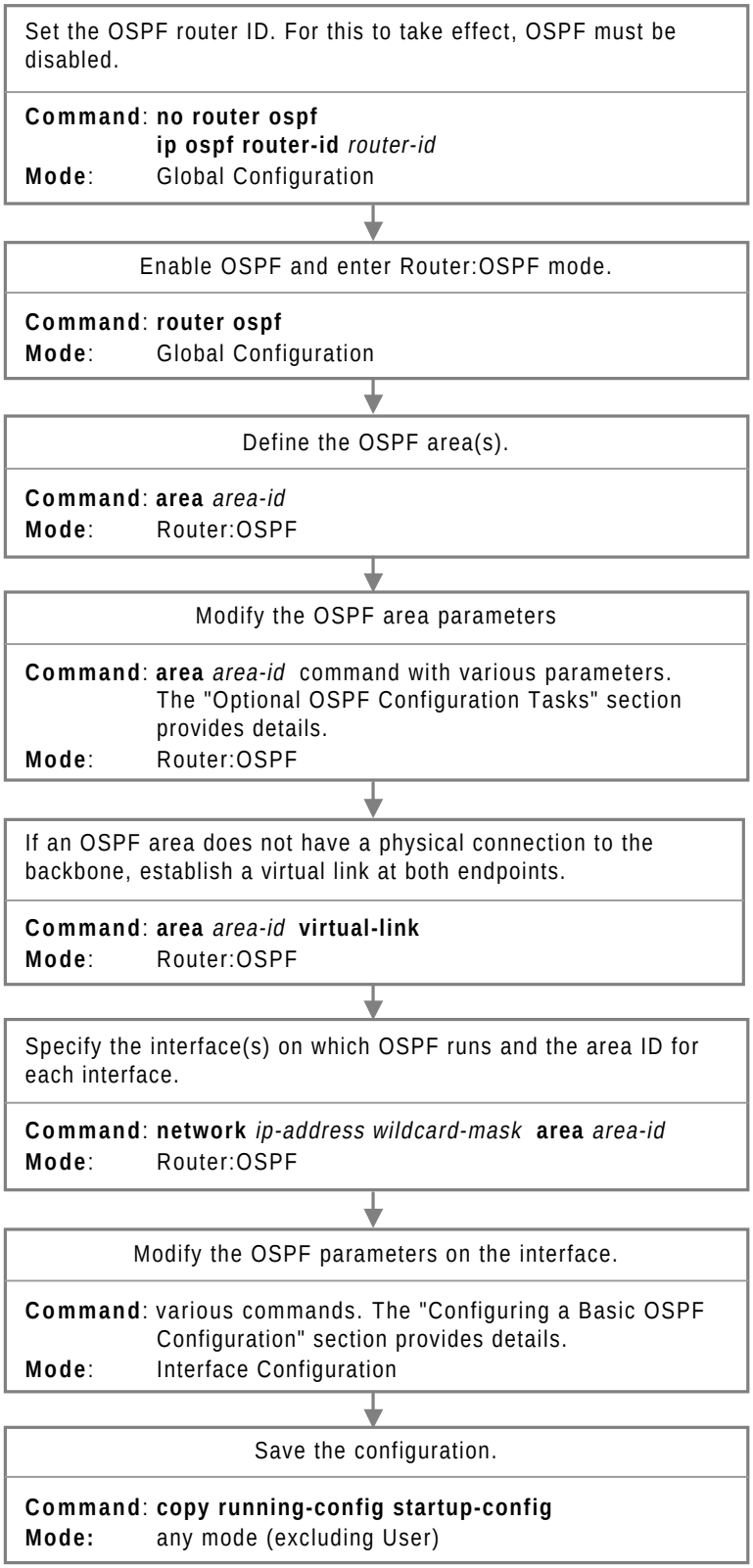
# 1 Configuring OSPF

This chapter describes how to configure the Open Shortest Path First (OSPF) protocol using the CLI and GUI.

## In This Chapter

- OSPF Basic Configuration Diagram
- Configuring OSPF using the CLI
- OSPF Configuration Examples

# OSPF Basic Configuration Diagram


Set the OSPF router ID. For this to take effect, OSPF must be disabled.
Command: no router ospf
ip ospf router-id router-id
Mode: Global Configuration
Enable OSPF and enter Router:OSPF mode.
Command: router ospf
Mode: Global Configuration
Define the OSPF area(s).
Command: area area-id
Mode: Router:OSPF
Modify the OSPF area parameters
Command: area area-id command with various parameters. The "Optional OSPF Configuration Tasks" section provides details.
Mode: Router:OSPF
If an OSPF area does not have a physical connection to the backbone, establish a virtual link at both endpoints.
Command: area area-id virtual-link
Mode: Router:OSPF
Specify the interface(s) on which OSPF runs and the area ID for each interface.
Command: network ip-address wildcard-mask area area-id
Mode: Router:OSPF
Modify the OSPF parameters on the interface.
Command: various commands. The "Configuring a Basic OSPF Configuration" section provides details.
Mode: Interface Configuration
Save the configuration.
Command: copy running-config startup-config
Mode: any mode (excluding User)
ospf1.vsd

## Restrictions using Stub and Not-So-Stubby Areas

Because stub and not-so-stubby areas do not carry external routes, an area can be defined as a stub or not-so-stubby area only when:

- ❒ All OSPF routers inside the stub area are configured as stub routers. These routers become neighbors.
- ❒ The area is not needed as a transit link for virtual links.
- ❒ No Autonomous System Boundary Router (ASBR) is internal to the stub area.
- ❒ The area is not the backbone area (area 0.0.0.0).
- ❒ There is a single exit point from the area or if there are multiple exits (Area Border Routers), routing outside the area does not have to take an optimal path.

# Configuring OSPF using the CLI

This section describes how to configure and verify OSPF using the CLI. It also includes configuration examples.

## Configuring a Basic OSPF Configuration

To create a basic OSPF configuration:

1. Go to Global Configuration mode.
2. Set the OSPF router ID. For this to take effect, OSPF must be disabled.

| Command | Description |
|---|---|
| no router ospf | Disable OSPF. |
| ip ospf router-id *router-id*<br>no ospf router-id | *router-id* - the IP address of the router.<br>The **no** form of the command reverts to the system default which is the lowest IP address configured on the system. |
| `Cajun (configure)#` **`no router ospf`**<br>`Cajun (configure)#` **`ip ospf router-id 122.23.4.5`** | |

3. Enable OSPF and enter Router: OSPF mode.

```
Cajun (configure)# router ospf
Cajun (configure router:ospf)#
```

**4.** Define the OSPF area(s).

| Command | Description |
|---|---|
| **area** *area-id* | *area-id* - a number in four-part, dotted-decimal notation that identifies the area. For example, 0.0.0.1 indicates area 1. When using OSPF in a single area, use **0.0.0.0**. |
| `Cajun(configure router:ospf)#` **area 0.0.0.1** | |

**5.** Specify the interface(s) on which OSPF runs and the area ID for each interface.

| Command | Description |
|---|---|
| **network** *ip-address wildcard-mask* **area** *area-id* | *ip-address* - the IP address of the interface.<br>*wildcard-mask* - an inverse mark that determines how to read *ip-address*. The mask has wildcard bits where 0 is a match and 1 is "don't care".<br>*area-id* - the area identifier. |
| `Cajun(configure router:ospf)#` **network 12.21.2.3 0.0.0.0 area 0.0.0.1** | |

**6.** If an OSPF area does not have a physical connection to the backbone, read this step. Otherwise, go to the next step.

When an OSPF area is not physically connected to the backbone, establish a virtual link at both endpoints. This is done using the **area** *area-id* **virtual-link** command described on the next page.

**Note:** If you are planning to configure an OSPF area as a stub area, virtual links cannot be established through stub areas.

***Table 1-1.*** *Area Virtual Link Command*

| area *area-id* virtual-link *router-id* [authentication-key *key*] [dead-interval *seconds*] [hello-interval *seconds*] [message-digest-key *key-id* md5 *key*] [retransmit-interval *seconds*] [transit-delay *seconds*] |
|---|
| area<br>*area-id* - area ID assigned to the transit area for the virtual link (decimal or dotted-decimal format).<br>virtual-link<br>*router-id* - the router ID of the virtual link neighbor. To obtain a neighbor's router ID, Telnet to the router and enter the **show ip ospf** command.<br>authentication-key<br>*key* - password for the neighboring OSPF routers on a network segment using OSPF's simple password authentication. Up to 8 bytes of any continuous string of characters is allowed. All neighboring routers on the same network must have the same password to route OSPF traffic.<br>dead-interval<br>*seconds* - the number of seconds hello packets must not have been seen before its neighbors declare the router down. The default is **four times** the hello-interval value. The range is **1** to **65535**. This value must be the same for all nodes on the specific network.<br>hello-interval<br>*seconds* - number of seconds between the hello packets on the virtual link. The default is **10** seconds and the range is **1** to **65535**. This value must be the same for all routers and access servers attached to a common network.<br>message-digest-key<br>*key-id* - a number the routers use for MD5 authentication. The range is **1** to **255**.<br>**md5** *key* - password the routers use for MD5 authentication. Up to 16 alphanumeric characters are allowed. All neighboring routers on the same network must have the same *key-id* and **md5** *key* to route OSPF traffic.<br>retransmit-interval<br>*seconds* - number of seconds between link state advertisement retransmissions for adjacencies belonging to an interface. The default is **5** seconds. The range is **1** to **3600** seconds.<br>transit-delay<br>*seconds* - estimated time to transmit a link state update packet on the virtual link. The default is **1** second and the range is **1** to **3600** seconds. |

**7.** Exit to Global Configuration mode and specify the interface on which OSPF is running. This enters Interface Configuration mode. For example:

```
Cajun (configure router:ospf)# exit
Cajun (configure)# interface serial0
Cajun (configure-if:serial0)
```

**8.** Define or modify the OSPF interface parameters.

| Command | Description |
|---|---|
| ip ospf authentication-key *password* | The password neighboring OSPF routers on a network segment use for OSPF's simple password authentication. Up to 8 bytes of any continuous string of characters is allowed. All neighboring routers on the same network must have the same password to route OSPF traffic. |
| **ip ospf cost** *cost* | The cost to send a packet on an OSPF interface. This is an unsigned integer expressed as the link state metric. The range is **1** to **65535**.<br>Example OSPF interface costs are:<br>• T1 (1.544-Mbps serial) - 128<br>• Ethernet - 10<br>All routers on the same link must have the same cost. |
| **ip ospf dead-interval** *seconds* | Number of seconds hello packets must not have been seen before its neighbors declare the router down. This value must be the same on neighboring routers.<br>The default is **four times the hello interval**. |
| ip ospf hello-interval *seconds* | Number of seconds between the hello packets sent to the OSPF interface. This value must be the same on neighboring routers. The default is **10** seconds. |
| ip ospf message-digest-key *keyid* md5 *key* | Enable OSPF MD5 authentication on an OSPF interface. By default, this is disabled.<br>*keyid* - identifier in the range **1** to **255**.<br>*key* - alphanumeric password of up to 16 bytes. |
| ip ospf poll-interval *seconds* | The time interval between hellos sent to an inactive interface. The default is **120** seconds. The range is **0** to **3600** seconds. |
| ip ospf priority *priority* | An 8-bit unsigned integer that represents the router priority level. The range is **0** to **255**. The default is **1**.<br>A value of **0** indicates an interface cannot be elected as a designated router (DR) or backup designated router (BDR). |
| **ip ospf retransmit-interval** *seconds* | Number of seconds between link state advertisement retransmissions for adjacencies belonging to the interface. The default is **5** seconds.<br>This value must be greater than the expected round-trip delay between two devices on the attached network. The range is **1** to **65535** seconds. |

| Command | Description |
|---|---|
| **ip ospf network** {**broadcast**\| **non-broadcast**\| **point-to-multipoint** [**non-broadcast**]} | Configure broadcast networks as nonbroadcast, multiaccess networks when, for example, there are routers in the network that do not support multicast addressing.<br>**broadcast** - sets the network type for the interface to broadcast. Ethernet is a broadcast network.<br>**non-broadcast** - sets the network type for the interface to nonbroadcast, multiaccess (Frame Relay, X.25).<br>**point-to-multipoint** [**non-broadcast**] - sets the network type to point-to-multipoint (HDLC, PPP).<br>**non-broadcast** - sets the point-to-multipoint network to nonbroadcast. When you include this keyword, configure the OSPF routers interconnecting to the nonbroadcast network using the **neighbor** command. |
| ip ospf transmit delay *seconds* | Estimated time to transmit a link state update packet on the interface. The default is **1** second. The range is **1** to **65535** seconds. |
| neighbor *ip-address* [priority *number*] [poll-interval *seconds*] | For point-to-multipoint non-broadcast networks only, the OSPF routers interconnecting to a nonbroadcast network.<br>*ip-address* - interface IP address of the neighbor.<br>*number* - an 8-bit number indicating the router priority value of the nonbroadcast neighbor associated with the specified IP address. The default is 0.<br>*seconds* - an unsigned integer value representing the poll interval. This value should be larger than the hello interval. The default is **120** seconds. |

**9.** Enter **copy running-config startup-config** to save the configuration.

**10.** Configure the optional OSPF parameters as described in the next section.

# Optional OSPF Configuration Tasks

***Table 1-2.*** *Tasks and Commands to Configure Additional OSPF Parameters*

| Task | Command | Parameter |
|---|---|---|
| Router:OSPF Mode | | |
| Define an OSPF area to be a stub area or a NSSA. Add the command to all routers within the area. The no form of a command removes a stub area or NSSA.<br>The "OSPF Configuration Examples" section includes stub area and NSSA configurations.<br>The **no** form removes a stub area or NSSA definition. | area *area-id* stub<br>no area *area-id* stub<br>area *area-id* nssa<br>no area *area-id* nssa | *area-id* - identifier for the stub/NSSA. This is a decimal value or an IP address. |
| (For ABRs only) The cost of the default route injected in the stub or NSSA. The default cost is **1**.<br>The **no** form restores the default. | **area** *area-id* **default-cost** *cost*<br>no area *area-id* default-cost | *area-id* - identifier for the stub/NSSA. This is a decimal value or an IP address.<br>*cost* - a 24-bit number that represents the cost for the default summary route within the stub or NSSA. |
| Configure route summarization on the ABR to consolidate and summarize routes at an area boundary. This causes a single summary route to be advertised to other areas. Route summarization minimizes the number of routing table entries and localizes the impact of a topology change.<br>The **no** form disables route summarization. | **area** *area-id* **range** *ip-address mask* [**no-advertise**]<br>no area *area-id* range | *area-id* - identifier of the area about which routes are to be summarized.<br>*ip-address* - IP address of the network to be advertised.<br>*mask* - IP subnet mask of the network to be advertised.<br>**no-advertise** - suppresses advertisements of IP routes. |
| Configure the link-state advertisements (LSAs).<br>The **no** form removes an LSA definition. | area *area-id* ase-filter<br>no area *area-id* ase-filter<br>area *area-id* translate-nssa-to-external<br>no area *area-id* translate-nssa-to-external | Filter type 3 ASE LSAs.<br>Translate type 7 LSAs into type 5. |

| Task | Command | Parameter |
|---|---|---|
| Specify a router as an Autonomous System Boundary Router (ASBR). An ASBR has at least one interface into an external internetwork (another autonomous system), such as a non-OSPF network. The ASBR redistributes non-OSPF network information to the OSPF network, and vice versa.<br>The **no** form disables ASBR status. | ip ospf as-boundary-router<br>no ip ospf as-boundary-router | None |
| Enable the automatic creation of virtual links. By default, this is disabled.<br>The **no** form restores the default. | ip ospf auto-vlink-create<br>no ip ospf auto-vlink-create | None |
| Modify the metric type for external routes to type1 or type2. The defaults are:<br>• **local** - type1<br>• **rip** - type2<br>• **static-hp** - type2<br>• **static-lp** - type2<br>The **no** form restores the default for the specified external route. | ip ospf ext-route-metric {local \| rip \| static-hp \| static-lp} {type1 \| type2}<br>no ip ospf ext-route-metric | None |
| Configure the maximum number of SPF paths OSPF can use. The default is **640** paths.<br>The **no** form restores the default. | ip ospf max-paths *paths*<br>no ip ospf max-paths | *paths* - the maximum number of SPF paths. The range is **640** to **16000**. |
| Enable/disable OSPF packet tracing. The **no** form disables OSPF packet tracing. | ip ospf packet tracing<br>no ip ospf packet tracing | None |

Optional OSPF Commands

# OSPF Configuration Examples

This section includes:

- ❒ Basic OSPF Configurations
- ❒ Router Summarization Configuration
- ❒ Virtual Link Configuration
- ❒ Stub Area Configuration
- ❒ Not-So-Stubby Area (NSSA) Configuration

## Basic OSPF Configurations

This example enables OSPF and redistributes RIP into OSPF and OSPF into RIP.

```
Cajun (configure)# router ospf
Cajun (configure router:ospf)# network 120.1.2.2  0.0.255.255  area 0.0.0.0
Cajun (configure router:ospf)# exit
Cajun (configure)# router rip
Cajun (configure router:rip)# network 120.2.2.2
```

This example enables OSPF routing, defines three OSPF areas (0.0.0.1, 0.0.0.2, and 0.0.0.3), masks specific address ranges within areas 0.0.0.1 and 0.0.0.2, and enables OSPF for all other networks using area 0.0.0.3.

```
Cajun (configure)# router ospf
Cajun (configure router:ospf)# network 111.1.5.3. 0.0.0.255  area 0.0.0.1
Cajun (configure router:ospf)# network 121.9.5.0  0.0.0.255  area 0.0.0.2
Cajun (configure router:ospf)# network 0.0.0.0  255.255.255.255  area 0.0.0.3
Cajun (configure router:ospf)# exit
!
!Interface testospf1 is in area 0.0.0.1
Cajun (configure)# interface testospf1
Cajun (config-if:testospf1)# ip address 111.1.5.20  255.255.255.0
Cajun (config-if:testospf1)# exit
!
!Interface testospf2 is in area 0.0.0.2
Cajun (configure)# interface testospf2
Cajun (config-if:testospf2)# ip address 121.9.5.8  255.255.255.0
Cajun (config-if:testospf2)# exit
!
!Interface testospf3 is in area 0.0.0.3
Cajun (configure)# interface testospf3
Cajun (config-if:testospf3)# ip address 121.19.0.0  255.255.255.0
Cajun (config-if:testospf3)# exit
!
!This saves the configuration.
Cajun (configure)# copy running-config startup-config
```

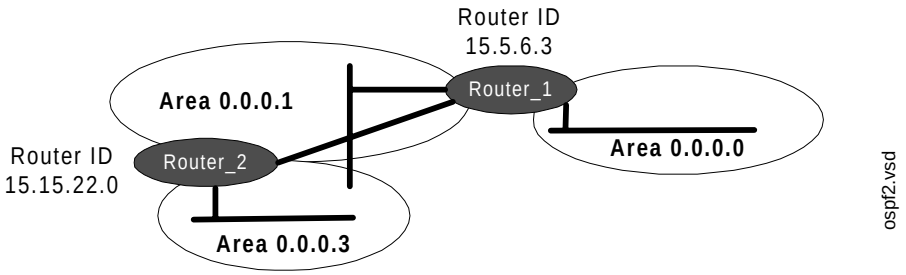
## Router Summarization Configuration

In this example, route summarization occurs in both directions between areas 0.0.0.1 and 0.0.0.0. This is achieved by masking the first three left-most bits of the subnet using mask 255.255.224.0.

```
Cajun (configure)# router ospf
Cajun (configure router:ospf)# network 172.11.6.2  0.0.0.0  area 0.0.0.1
Cajun (configure router:ospf)# network 152.11.33.5  0.0.0.0  area 0.0.0.0
Cajun (configure router:ospf)# area 0.0.0.0 range  172.4.4.2  255.255.224.0
Cajun (configure router:ospf)# area 0.0.0.1 range  172.4.2.1  255.255.224.0
Cajun (configure router:ospf)# exit
!
!This saves the configuration.
Cajun (configure)# copy running-config startup-config
```

# Virtual Link Configuration

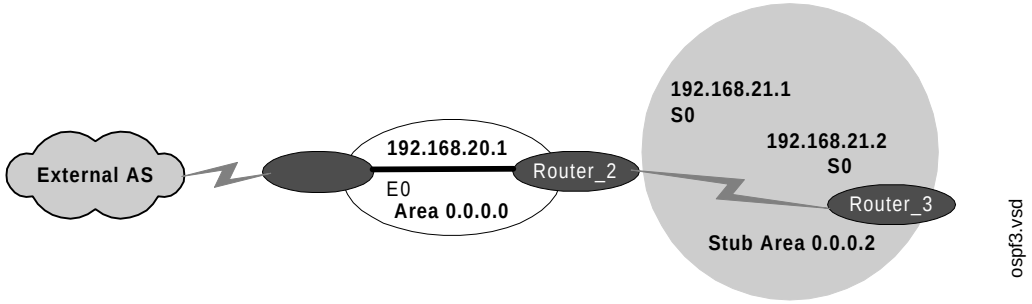
In this example, area 0.0.0.3 does not have a direct physical connection to the backbone (area 0.0.0.0). To establish a backbone connection, a virtual link is configured between Router_1 and Router_2. Area 0.0.0.1 is the transit area and Router_1 is the entry point into area 0.0.0.0. Router_2 has a logical connection to the backbone through the transit area.




```
!Configuration on Router_2
Cajun (configure)# router ospf
Cajun (configure router:ospf)# network 172.11.0.0  0.0.0.255  area 0.0.0.1
Cajun (configure router:ospf)# network 172.17.0.0  0.0.0.255  area 0.0.0.3
!This command defines area 0.0.0.1 as the transit area and the router ID
!of the other side of the virtual link is configured.
Cajun (configure router:ospf)# area 1.0.0.0 virtual-link 15.5.6.3
!
!Configuration on Router_1
Cajun (configure)# router ospf
Cajun (configure router:ospf)# network 11.10.0.0  0.0.0.255  area 0.0.0.0
Cajun (configure router:ospf)# network 11.25.0.0  0.0.0.255  area 0.0.0.1
!
!This command defines area 0.0.0.1 as the transit area and the router ID
!of the other side of the virtual link is configured.
Cajun (configure router:ospf)# area 0.0.0.1 virtual-link 15.15.22.0
Cajun (configure router:ospf)# exit
!
!This saves the configuration.
Cajun (configure)# copy running-config startup-config
```

## Stub Area Configuration

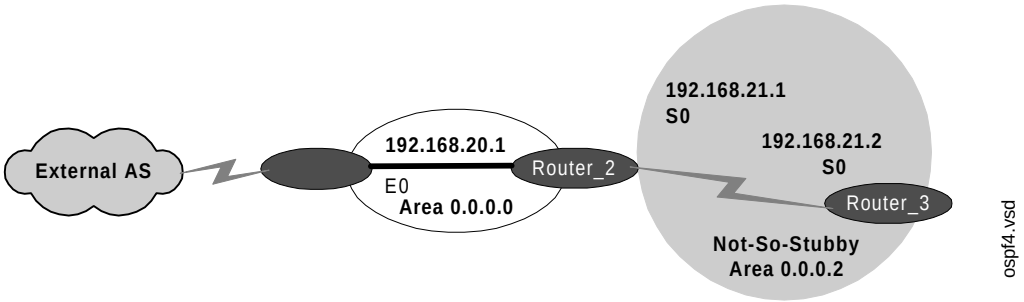
In this example, area 0.0.0.2 is the stub area. No external routes from the external autonomous system are forwarded into the stub.




```
!Configuration on Router_2
Cajun(configure)# router ospf
Cajun(configure router:ospf)# network 192.168.20.0  0.0.0.255  area 0.0.0.0
Cajun(configure router:ospf)# network 192.168.21.0  0.0.0.255  area 0.0.0.2
Cajun(configure router:ospf)# area 0.0.0.2 stub
!
!Configuration on Router_3
Cajun(configure)# router ospf
Cajun(configure router:ospf)# network 192.168.21.0  0.0.0.255  area 0.0.0.2
Cajun(configure router:ospf)# area 0.0.0.2 stub
Cajun(configure router:ospf)# exit
!
!This saves the configuration.
Cajun(configure)# copy running-config startup-config
```

## Not-So-Stubby Area (NSSA) Configuration

In this example, the only routes that appears in Router_3's routing table are intra-area routes and the default route.




```
!Configuration on Router_2
Cajun(configure)# router ospf
Cajun(configure router:ospf)# network 192.168.20.0  0.0.0.255  area 0.0.0.0
Cajun(configure router:ospf)# network 192.168.21.0  0.0.0.255  area 0.0.0.2
```

```
Cajun(configure router:ospf)# area 0.0.0.2 nssa
!
!Configuration on Router_3
Cajun(configure)# router ospf
Cajun(configure router:ospf)# network 192.168.21.0  0.0.0.255  area 0.0.0.2
Cajun(configure router:ospf)# area 0.0.0.2 nssa
Cajun(configure router:ospf)# exit
!
!This saves the configuration.
Cajun(configure)# copy running-config startup-config
```

## Verifying OSPF Operation

To verify OSPF operation and display statistics, use these **show** commands in any command mode. For output field descriptions, refer to the *Cajun P550/P220™ Command Line Interface Reference Guide.*

| Command | Description |
|---|---|
| show ip ospf | Display the number of times the shortest path first (SPF) algorithm has executed, the number of areas in the router, and the number of interfaces in an area. |
| show ip ospf database [{asbr-summary \| external \| network \| nssa-external \| router \| summary}] | Display the router ID and the link-state database.<br>• **asbr-summary** - information about the ASBR summary LSAs.<br>• **external** - information about the external LSAs.<br>• **network** - information about the network LSAs.<br>• **nssa-external** - information about the NSSA external LSAs.<br>• **router** - information about the router LSAs.<br>• **summary** - entire database information. |
| show ip ospf interface [*interface-name*] | Use this command to verify the interfaces have been configured in the intended areas. This command also shows the timer intervals including the hello interval. |
| show ip ospf neighbor [*interface-name*] [*neighbor-id*] | Display details about the neighbors by interface name or neighbor ID. |
| show ip ospf virtual-links | Display information about the virtual links. |

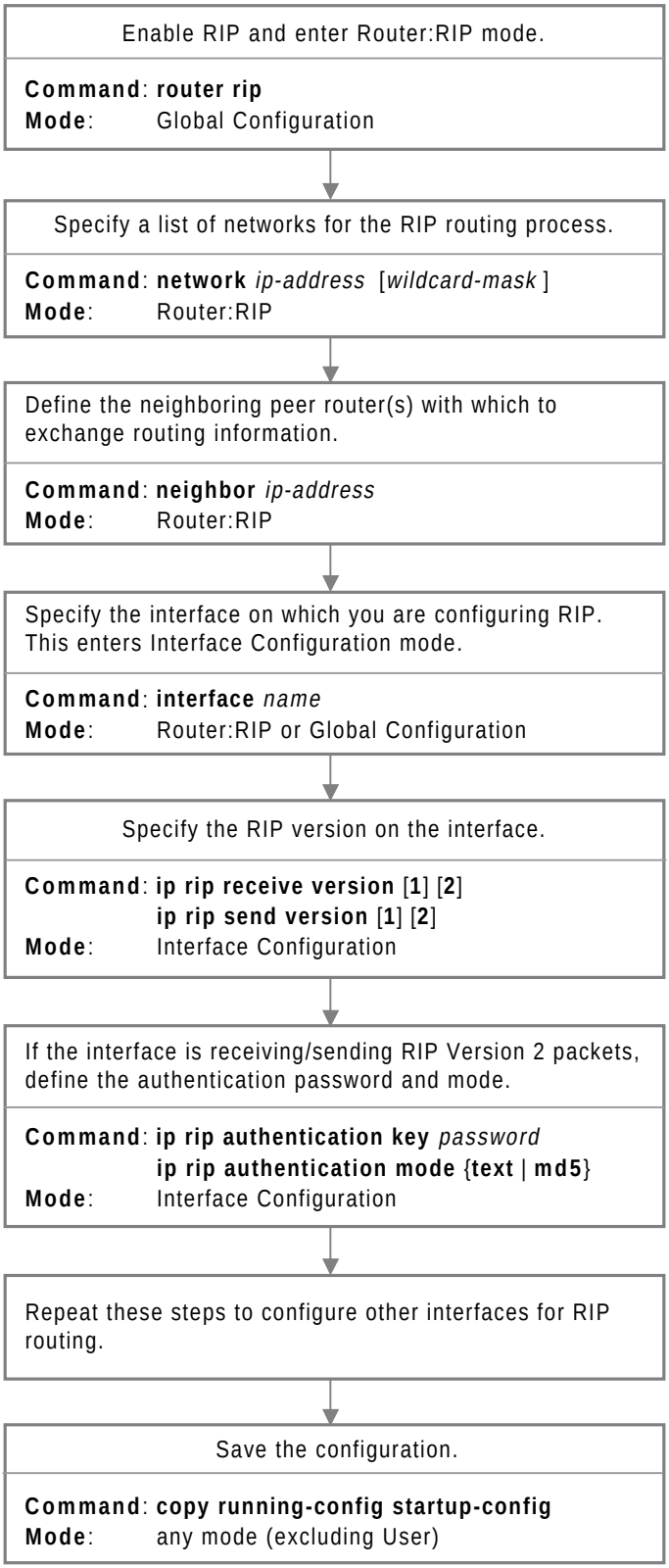
# 2 Configuring RIP

This chapter describes how to configure the Routing Information Protocol (RIP) using the CLI and GUI.

## In This Chapter

- RIP Configuration Diagram
- Configuring RIP using the CLI

# RIP Configuration Diagram


Enable RIP and enter Router:RIP mode.
Command: router rip
Mode: Global Configuration
Specify a list of networks for the RIP routing process.
Command: network ip-address [wildcard-mask ]
Mode: Router:RIP
Define the neighboring peer router(s) with which to exchange routing information.
Command: neighbor ip-address
Mode: Router:RIP
Specify the interface on which you are configuring RIP. This enters Interface Configuration mode.
Command: interface name
Mode: Router:RIP or Global Configuration
Specify the RIP version on the interface.
Command: ip rip receive version [1] [2]
ip rip send version [1] [2]
Mode: Interface Configuration
If the interface is receiving/sending RIP Version 2 packets, define the authentication password and mode.
Command: ip rip authentication key password
ip rip authentication mode {text | md5}
Mode: Interface Configuration
Repeat these steps to configure other interfaces for RIP routing.
Save the configuration.
Command: copy running-config startup-config
Mode: any mode (excluding User)
rip1.vsd

# Configuring RIP using the CLI

This section describes how to configure RIP using the CLI. It also includes a configuration example.

## Creating a Basic RIP Configuration

To create a basic RIP configuration:

1. Go to Global Configuration mode.
2. Enable RIP and enter Router:RIP mode.

```
Cajun(configure)# router rip
Cajun(configure router:rip)#
```

3. Specify a list of networks for the RIP routing process. This sends RIP updates to the interfaces in these networks. When an interface's network is not specified, it is not advertised in any RIP update.

| Command | Description |
|---|---|
| **network** *ip-address* [*wildcard-mask*] | *ip-address* - IP address of the network of directly connected networks.<br>*wildcard-mask* - mask of the network on which RIP is to run. |
| `Cajun(configure router:rip)#` **network 12.21.2.3 0.255.255.255**<br>`Cajun(configure router:rip)#` **network 15.8.2.32** | |

4. Enter **copy running-config startup-config** to save the configuration. For example:

```
Cajun(configure router:rip)# copy running-config startup-config
  Wrote running-config to '/nvram/startup.txt'
Cajun(configure router:rip)#
```

To configure optional RIP parameters, refer to the next section.

## Optional RIP Configuration Tasks

Table 2-1 lists the tasks and commands to configure additional RIP parameters.

***Table 2-1.*** *Optional RIP Tasks and Commands*

| Task | Command | Parameter |
|---|---|---|
| Router:RIP Mode | | |
| Define the neighboring peer router(s) with which to exchange routing information.<br>**Note:** Adding one or more RIP neighbors ensures that the router only accepts information from these neighbors. Consequently, all other information is filtered. Do not create RIP neighbor(s) if you do not want to filter RIP information from the network. | **neighbor** *ip-address* | *ip-address* - IP address of a peer router with which to exchange routing information. |
| Change the interpacket delay for RIP updates. The default is **no delay** (0 milliseconds).<br>This command is useful when a high-end router is sending at high-speed to a low-speed router. | **output-delay** *milliseconds* | *milliseconds* - the delay between packets in a multiple-packet RIP update. The range is **8** to **50** milliseconds. |
| Globally enable/disable the use of RIP triggered updates. The default is disabled. | triggered updates<br>no triggered updates | None |
| Interface Configuration Mode | | |
| When an interface is receiving/sending RIP Version 2 packets, specify the authentication password and mode. The default authentication mode is **text**. | ip rip authentication key *password*<br>**ip rip authentication mode** {**text** \| **md5**} | *password* - a string of up to 16 characters that represents the authentication password used on the interface.<br>**text** - clear text authentication. This method is suggested when security is not an issue.<br>**md5** - keyed MD5 authentication. |
| Enable/disable split-horizon with poison reverse. By default, split horizon with poison reverse is enabled on all interfaces. | ip rip poison-reverse<br>no ip rip poison-reverse | None |

| Task | Command | Parameter |
|---|---|---|
| Interface Configuration Mode | | |
| Set the RIP default route characteristics. There is no default. | ip rip default-route-mode {talk-only \| listen-only \| talk-listen \| none} | **talk-only** - the default route is advertised in RIP updates but ignored on incoming neighbor updates.<br>**listen-only** - the default route is suppressed from RIP updates but accepted on incoming neighbor updates.<br>**talk-listen** - the default route is advertised and accepted.<br>**none** - the default route is not advertised or accepted. |
| Specify the RIP version to receive and send on the interface. By default, an interface receives and sends RIP Version 1 packets only. | **ip rip receive version** [**1**] [**2**]<br>**ip rip send version** [**1**] [**2**] | To accept or send only RIP Version 1 packets on an interface, enter **1**.<br>To accept or send only RIP Version 2 packets on an interface, enter **2**.<br>To accept or send RIP Version 1 and Version 2 packets on an interface, enter **1** and **2** separated with a space. |
| Set the RIP send and receive mode on the interface. The default is **talk-listen**. | ip rip send-receive-mode {talk-only \| listen-only \| talk-listen} | **talk** - transmits updates on the interface and does not receive them.<br>**listen** - receives updates on the interface and does not transmit them.<br>**talk-listen** - transmits and receives updates on the interface. |

## RIP Configuration Example

This example shows a basic RIP configuration.

```
Cajun(configure)# router rip
Cajun(configure router:rip)# network 108.121.0.0
Cajun(configure router:rip)# network 125.34.5.0
Cajun(configure router:rip)# neighbor 108.130.0.0
Cajun(configure router:rip)# interface testrip
Cajun (config-if:testrip)# ip rip receive version 1 2
Cajun (config-if:testrip)# ip rip send version 1 2
Cajun (config-if:testrip)# ip rip authentication key classA
Cajun (config-if:testrip)# ip rip authentication mode md5
Cajun (config-if:testrip)# copy running-config startup-config
    Wrote running-config to '/nvram/startup.txt'
Cajun(configure router:rip)#
```

## Displaying RIP Statistics

To display RIP statistics, enter the **show ip rip statistics** command in any mode.

```
Cajun(configure)# show ip rip statistics
State is                    UP
Triggered Updates Sent      9
n-triggered Updates Sent    0
Updates Received            15
Bad Packets Received        0
Bad Routes Received         0
```

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